COMMISSION OF INQUIRY INTO THE MARKETING OF BEEF AND VEAL

A COMPARISON OF LIVE CATTLE PRICES AND CARCASS COSTS

Research Report No. 3

by
H. Bruce Huff

Ottawa
February 1976

COMMISSION OF INQUIRY INTO THE
MARKETING OF BEEF AND VEAL

A COMPARISON OF LIVE CATTLE PRICES AND CARCASS COSTS

Research Report No. 3
by
H. Bruce Huff

Ottawa
February 1976

Available by mail from

Printing and Publishing
Supply and Services Canada
Ottawa, Canada K1A 0S9

or through your bookseller.

Catalogue No. CP32-22/1976-3 Price: Canada: $1.50
ISBN 0-660-00660-x Other countries: $1.80

Price subject to change without notice.

N O T E

The following research report was prepared at the request of the Commission of Inquiry into the Marketing of Beef and Veal to assist it in fulfilling its mandate. The analysis and conclusions contained in this report are the responsibility of the author(s) and do not necessarily reflect the views of the Commission.

Foreword

The procedures used in this report were developed through joint discussions among representatives of the Meat Packers Council of Canada, the Canadian Cattlemen's Association, National Livestock Exchange Members, country auction owners and the Commission research staff. The Ontario Independent Meat Packers Association also co-operated fully in the study. The Ontario Public Stockyards, Kitchener-Waterloo Stockyards, Stratford Livestock Exchange and Hensall Livestock Auction permitted the use of their sales records to compile information on live cattle sales.

Mr. Dean Iler was employed to implement the procedures for the collection of the basic data used in the study, assisted by the Canadian Cattlemen's Association. The data were prepared for analysis by Mark Spearin and Arlene Pede, and data processing was carried out by a private firm. The overall responsibility for the project and the preparation of the report was assumed by the Research Director.

Ottawa
February 1976

H. Bruce Huff
Research Director

EXECUTIVE SUMMARY

This study was designed to assess how accurately live cattle prices reflected their actual carcass value and to compare cattle prices between major markets used by producers.

Most cattle are purchased on a live weight basis necessitating estimation of some very precise quantity and quality carcass characteristics which are unobservable or difficult to consistently assess on a live animal.

Information to compare cattle prices between markets is difficult to obtain for non-terminal markets and moreover, comparisons are complicated because of quality and yield variations between cattle sold and differences in direct and indirect marketing costs.

For this study, live cattle prices and the equivalent carcass costs were obtained for 15,681 head of cattle for sales at terminal, country auction and direct to packer live weight and rail grade markets in Southern Ontario during a seven week period in June-July 1975.

Cattle were grouped into homogenous categories relating to six major grades (A1, A2, A3, A4, B and C), sex (steers, heifers) and markets (terminal, auction, direct live weight and direct rail grade).

Average live prices and average carcass costs were obtained for each of the 120 categories as were the variability of cattle prices and carcass costs for each.

The significant findings of the study were:

(a) Although no single market demonstrated a clear superiority, net returns for steers were generally highest for direct sales, and for heifers were highest at Toronto terminal.

(b) Price variability was substantially greater for heifers than for steers and for lower grades (B and C) than A grade.

(c) In comparing marketing channels, price variability for A grade cattle was generally lowest for rail grade sales, followed by auctions, the Toronto terminal and lastly by direct to packer live weight.

(d) Variability in carcass costs for many categories was large. More than one half of these had a price range exceeding \$6./cwt. (carcass weight).

TABLE OF CONTENTS

LIST OF TABLES

1. NATURE OF THE PROBLEM

Beef producers have expressed a concern that price differences between similar quality cattle often appear excessive. They contend that the price received for their cattle does not always correspond to the daily market reports. Also, there has been little factual evidence relating to the debate as to which market returns produce the highest net income, since the same cattle cannot be sold in several markets and differences may vary from various types of cattle and for various time periods.

Beef packers, on the other hand, contend that prices basically reflect quality and yield differences. It is claimed that cattle buyers are very accurate in estimating carcass grades and are normally correct within one half of one percent on estimated dressing percent or yield. The prices paid in each market generally reflect only the differences in transfer costs to the packing plant. Most importantly, they argue that carcass buyers actively discriminate within a carcass grade and, of necessity, this is included in the live cattle buying price.

From an economic point of view, for a market to function effectively, information on those characteristics of the product most highly desired by consumers must be transmitted through the price setting mechanism to producers, rewarding those marketing a product most valuable to consumers. Concomitant to this objective, prices for products of the same value should be equal for all sales and all markets, allowing for transportation and marketing cost differences. In the beef market, the federal carcass grading system introduced in 1972 was designed to classify beef carcasses into 15 quality and quantity categories which would be homogenous according to their value at the retail level and hence, facilitate the transmission of consumer demands to producers. At the same time, it must be recognized that consumer demands are not homogenous, creating different demands in different markets.

At the retail level, consumers express their wishes for an acceptable quality, form and price of beef through their purchases. Thus, the price is established for a carcass in terms of its value to the retailer in the form of saleable consumer cuts. This is translated back to the carcass market by establishing prices for the various carcass grades which, in turn, establishes prices for various qualities of live cattle. However, this principle will only work if at each stage in the marketing chain the consumer characteristics which are most highly valued are translated into a premium price, while those which are less valued are correspondingly discounted.

Most slaughter cattle in Canada are sold on a live weight basis. All terminal, all country auction and the majority of direct to packer sales are on a live weight basis. Since packers sell dressed cattle largely on the basis of grade, they must estimate the value of live cattle in terms of their eventual carcass value. To do this, buyers must simultaneously estimate its carcass grade and

dressing percentage. The carcass grade depends on a number of characteristics including age, texture, muscling, colour, fat covering and fat colour.[1] However, even on a carcass these characteristics are either not precisely measured (e.g. muscling, texture) or only marginal changes exist between grades (e.g. .01 inches of fat at the margin between numbers in A and B grades). Therefore, it is exceedingly difficult to differentiate between certain of the grades of cattle on live basis, because external characteristics may not relate to internal characteristics (e.g. meat colour), or may relate in a variable fashion.

In addition to grade, the buyer must estimate the yield of saleable meat or dressing percentage of the live animal. This will depend on such factors as the amount of fill (i.e. the amount of feed and water in the animal's stomach), the amount of tissue shrink, the proportion of by-products and waste, the weight of manure on the hide, the extent of trim, bruising and condemnations, etc. Again, these factors are relatively difficult to estimate precisely from a live animal, because any external characteristics do not relate perfectly to internal composition.

Errors in the estimation of grades and yields are costly. If a buyer purchases an animal assuming an A1 carcass and it is graded B1, because of inadequate fat cover or a dark colour of the meat, there is a loss of approximately \$50-\$60 in the value of that animal. An error of three percent in the estimation of yield will result in a difference of \$20 to \$30 per head at current prices.

The buyer's problem of estimation is further complicated by the method of sale generally used for cattle. Most often they are grouped in lots that are not completely homogenous with respect to grade. The buyer must visually estimate grades and yields for perhaps 20 head of cattle in a few seconds, translate that into a live offer price, while competing in a bidding process with other buyers, all of which happens in the space of one or two minutes.

Undoubtedly, to avoid the risk of paying too much, buyers will attempt to hedge their position by averaging. That is, buyers are likely to include a margin of error in the bidding process to cover the possibility of low grade animals in each lot. Therefore, producers of all top grade animals (e.g. with no low grade animals in the lot) may not receive high enough prices while those producers with lower valued animals in their lots receive too high a price. Consequently, some producers are not rewarded sufficiently for producing the type of carcass most desired by the consumers, while other producers are over-compensated for carcasses of lower value to consumers.

Live cattle prices are publicly reported only from terminal markets. Producers depend on this source of market news, along with personal observations

---

[1] 1972: Beef Carcass Grading Act.

to compare prices in different markets. However, the basis of comparison is on the live price (except for those animals rail graded). If cattle buyers have some difficulty in establishing the appropriate value, market reporters and producers face an even harder task of comparing prices with variable quality cattle. Consequently a much more accurate comparison of prices paid in different markets is on a carcass cost basis which takes into account the actual grades and yields, thereby, enabling a comparison of prices on a uniform quality product.

Market reporters estimate the eventual carcass grades from the live animal to report prices at terminal markets. Since these animals are normally not identified through to slaughter, there is no means to check on grade estimates of live sales at the carcass level to verify the accuracy of the live grade estimation.[2] For a market to perform effectively, all participants must have information which is as complete and accurate as possible or it distorts and invalidates price comparisons.

In addition to all of the physical problems of evaluating the value of live cattle described above, the degree of competition in a market also has an important influence on transaction prices. For example, a particular lot of cattle may not have many bidders, simply because it is not the type of cattle for which most firms have a market. Similarly, prices may differ among markets for the same quality of cattle because of differing levels of competition. Also, on a private treaty basis, producers may have difficulty in obtaining information as to what is the current price. Moreover, uniformity of cattle prices from one sale to the next cannot be expected.

The remaining sections of the report contain the study's objectives, scope and methodology, an analysis of the price data, the implications of the results and summary and conclusions.

---

2 From data obtained in this study, an assessment was made of the market reporters price range and the "true" price range. The results of this comparison are reported in Commission of Inquiry, The Canadian Beef Industry Marketings and Trade, Research Report No. 1.

2. OBJECTIVES, SCOPE AND METHODOLOGY OF THE STUDY

Objectives

The principle objectives of the study were to:

(a) obtain live cattle prices and convert those to packer carcass cost basis, that is, cost per pound of hot dressed weight:

(b) to compare the average level of carcass costs between markets for identical grades and sexes:

(c) to calculate the variability of carcass costs within identical grades and sexes, and compare the extent of the variability among markets and among grades: and

(d) to examine and explain reasons for any differences observed in the above comparisons.

Scope

The study covered more than 15,000 head of cattle. These cattle were marketed at the Ontario Public Stockyards, auction markets and directly to beef packing plants in Southern Ontario, between June 13 and July 25, 1975. From the Ontario Public Stockyards, information on all sales of steers and heifers were obtained for June 13, July 4, 15, 18 and 25 and a sample of sales for June 26. Data for all lots of steers and heifers were obtained from auction markets at Stratford on July 4, Kitchener on July 10 and Hensall on July 24. Information on the direct plant deliveries of live and rail graded cattle were obtained for cattle slaughtered during the week of July 21-25. Twenty-seven meat packing plants in Southern Ontario co-operated in the study and provided data on each lot to the Commission.

Method of Analysis

The procedure used in the study was to visit the stockyards or auction market on the day of the sale and immediately afterwards obtain information on each sale lot of cattle. The information for each lot consisted of the number of head, live price, live weight, sex and purchases. These sale lots were combined into packer kill lots. Each packer received a separate coding form for each kill lot, listing all of his purchases (sublots) and the above information from the weigh scale tickets. Each firm was asked to provide for each kill lot, the date of kill, hot weight and numbers of animals in each official grade.

For direct to plant purchases, packers received coding forms and were asked to provide information on all direct purchases slaughtered during a one-week period of July 21-25. For live purchases, the packers were asked to provide purchase and kill dates, live weight, hot dressed weight, sex, live price and number of animals in each grade and price paid for each grade.

One member of the research team, who was familiar with the meat industry in Ontario, visited the packing plants to ensure that records were being properly completed and to assist in completing the information.

The data from all lots were verified and tabulated. An average carcass (or flat) cost was calculated for each packer kill lot. This was obtained by dividing the live price by the ratio of dressed to live weight (e.g. dressing percentage). From the average live price and the average carcass cost, an A1 equivalent was obtained for each kill lot. This was generated by adjusting the average live price and carcass cost for any lower valued animals using a fixed set of discounts from A1 prices. These discounts from the A1 price for all other grades are given in Appendix Table I. The A2 equivalent price was obtained by taking the A1 equivalent price and subtracting the discount for A2's. Thus, grade equivalent prices were developed from each lot. An example of the above procedure is shown in Appendix I.

For each lot of cattle, an average live price, an average carcass cost and a grade equivalent live price (i.e. adjusting for different grades in the lot) and grade equivalent carcass cost was calculated. Lots were combined into 120 categories. These categories were differentiated on the basis of grade, sex, market and day (e.g. A1 steers, Toronto, June 13). For each of these categories, the average price and the variance among all lots in the category were calculated.

A conscientious attempt was made to isolate all A1-X type cattle and light heifers or steers which would have greatly increased the price variability for some of the small categories. It is not certain that all of these were identified and consequently price variability may be higher as a result. A further limitation of the study was the use of lots of cattle rather than individual animals. Because some of the differences in lots could not be ascertained (e.g. weights), the observed variability may also be greater.

3. THE RESULTS OF THE STUDY

Reliability of the Data

The period over which data for the study was collected was one that contained no unusual price fluctuations or extremes in marketings. Published wholesale carcass prices for the Southern Ontario region are shown in Table 1 for the weeks over which the study was conducted, as well as the week prior and subsequent to this period. Average wholesale carcass prices for this period were reported to be $89.25/cwt. for A1 steers and $86.60/cwt. for A1 heifers. The range between the highest and lowest weekly prices during this period was $2.54/cwt. for steers and $3.25/cwt. for heifers. The main contributor to this range was the decline in price during the last two weeks of the period.

A comparison of the steer and heifer marketings at the Ontario Public Stockyards for the June-July period of 1975 with the same two months of 1974 and the annual total for all of 1974 (Table 2) shows that the total and the grade composition of the marketings were quite similar. The main differences were a decline in steer marketings and a change in composition with a higher proportion of A1,2 steers and heifers, a lower proportion of A3 steers and heifers, and a lower proportion of common steers.

The sample of livestock surveyed on this study involved 615 packer kill lots and 15,681 head of cattle. There were 436 lots of steers and 179 lots of heifers. Approximately two thirds of the cattle surveyed graded A1,2. A complete breakdown of gradings by sex is shown in Appendix Table II.

Each packer kill lot was included in at least one of 120 categories which was differentiated by market day (10 categories), sex (two categories) and grade (six categories). Data for some lots were incorporated in more than one grade category, since packer kill lots often contained animals of more than one grade. The contribution of that lot to any category, however, was in proportion to (weighted by) the number of animals within that grade.

The following two sections provide data relating to live prices and carcass costs. In both sections, price level and variability comparisons will be made between sexes and among markets, that is between steers and heifers and among the terminal market, country auctions, direct to packers live weight sales, and direct to packers dressed weight sales.

In both live prices and carcass costs, the data for each lot have adjusted to account for the different grades of cattle within the lot. The procedure for this is shown in Appendix I. Lots within each category are uniform with respect to grade and sex and all differences can be attributed to the buyer evaluation problems outlined in the first part of this paper.

Table 1: Average Weekly Reported Carcass Prices for Steers and Heifers, Southern Ontario, June 7-August 2, 1975.

Week Ending		Steers	Heifers
		($/cwt.)	
June 7		87.80	85.80
June 14		90.80	88.00
June 21		89.30	87.10
June 28		89.20	86.40
July 5		89.00	87.50
July 12		90.29	87.50
July 19		88.40	84.80
July 26		87.75	84.75
August 2		86.50	82.25
June 14-August 26	mean	89.25	86.60
	Range (H-L)	2.54	3.25

Source: Agriculture Canada: Canadian Livestock and Meat Trade Report, various issues.

Table 2: Steer and Heifer Marketings at Ontario Public Stockyards for June-July 1974 and 1975, and Annual for 1974.

Category	June-July, 1975	June-July, 1974	Total 1974
	(percent)		
Steers			
A1,2	65.6	58.9	61.5
A3	6.8	9.3	9.2
A4	0.8	0.7	0.6
Common	26.8	31.2	28.7
Total	100.0	100.0	100.0
Total (no.)	(48,975)	(59,227)	(217,454)
Heifers			
A1,2	56.1	53.3	59.5
A3	5.3	7.9	8.3
A4	0.5	0.4	0.5
Common	38.1	38.5	31.8
Total	100.0	100.1	100.1
Total (no.)	(18,612)	(18,674)	(100,462)

Sources: Agriculture Canada: Canadian Livestock and Meat Trade Report (June, July monthly summaries) and Livestock Market Review (1974).

No analysis is presented for the cow prices obtained because of the small number of samples and the lack of data from direct sales and several other markets. Those data obtained did not indicate serious inconsistencies.

The heifer prices obtained from the Kitchener sale on July 10 were not used in the analysis because of the small number (18 head) and the very poor quality of animals.

Commission agents indicated the sale on Friday, June 13 in Toronto was atypical in that prices during the day declined and then rose sharply. From the analysis, it was found that the price variability was large for four categories (A1 and B heifers and A3 and A4 steers), but for all other categories, price variability was higher on other days.

At Toronto, prices for the Friday sale are considered to be less variable than for other days. Data from Friday sales were obtained on four days and for one Tuesday sale (July 15). It was found in only one category (A3 heifers) that price variability was highest on Tuesday (July 15) and in many other cases, there were at least two other days in which prices were more variable.

Live Price Comparisons

(i) Price Level of Live Animals. Average live prices for the five days at Toronto, the three country auctions and direct to packer live weight sales are shown in Table 3. As indicated in the previous section, prices remained quite uniform during the period. For Toronto, the average daily A1 steer price ranged from a high of $51.86/cwt. (July 4) to a low of $48.74/cwt. (July 18) or $3.13/cwt. The range from high to low for B grade steers was slightly less at $2.17/cwt., while for C grade steers it was $5.86/cwt. The average daily price range for heifers at the Toronto market was slightly higher for all grades being $4.04, $4.32 and $7.55/cwt. for A1, B and C grades, respectively. Prices generally declined towards the end of the survey period from high levels observed in the early or middle part.

Since the categories in Table 3 are uniform with respect to grade, a comparison of price among the different markets can be made. For this comparison, the same day or days very close together were used. Stratford was compared with Toronto on July 4, Kitchener was compared with Toronto on July 15 and Hensall was compared with Toronto on July 25. Direct live purchases were compared with Toronto and country auctions on the same day of purchase.

Comparing Toronto and Stratford prices, it was found that Toronto prices were higher for each of the 11 categories.[3] Differences varied markedly

3 There were no A4 heifers purchased at Stratford thereby eliminating that category for comparison with Toronto.

Table 3: Average Live Prices for Steers and Heifers, by Grade, by Market

	Toronto June 13	Toronto July4	Toronto July 15	Toronto July 18	Toronto July 25	Stratford July 4	Kitchener July 10	Hensall July 24	Direct Live
A1									
Steers	49.98	51.86	49.67	48.74	49.75	50.35	48.35[a]	48.10	48.79
Heifers	46.93	47.44	44.28	43.40	46.04	46.25		44.40	45.24
A2									
Steers	50.58	52.22	50.42	50.01	49.67	50.85	49.21[a]	48.45	49.59
Heifers	47.96	47.72	44.25	44.79	45.21	45.92		44.74	44.85
A3									
Steers	48.92	50.60	48.80	48.26	48.34	48.68	46.70	46.70	47.78
Heifers	48.60	49.48	42.59	42.56	42.82	43.23	-	41.86	41.07
A4									
Steers	45.74	47.16	45.84	45.29	45.10	42.84	42.91	-	43.91
Heifers	44.80	-	41.29	-	-	-	-	41.50	-
B									
Steers	41.72	43.37	41.47	41.20	42.34	42.93	42.25[a]	42.73	41.44
Heifers	42.42	41.74	38.42	38.10	39.26	41.30		37.48	38.53
C									
Steers	33.21	39.07	36.43	37.62	34.76	35.59	34.42[a]	31.87	34.66
Heifers	35.06	34.98	31.89	27.51	30.24	33.25		25.11	26.34

[a] Sample too small to supply reliable estimates.

Source: Commission Survey.

between categories. For example, B grade steers were only $0.44/cwt. higher in Toronto while A3 heifers were $6.25/cwt. higher. The average difference for the five steer categories was $2.17/cwt. while for the heifer categories, the average was $2.28/cwt. The differences for each category are reported in Appendix Table III.

Comparing prices at Kitchener and Toronto shows that prices were higher for all categories in Toronto except B grade steers. Differences between categories were substantial, varying from -$0.79 for B grade steers to $2.93/cwt. for A4 steers and from $0.93/cwt. for C grade heifers to $6.36/cwt. for B grade heifers. The mean difference was $1.47/cwt. for steers and $3.00/cwt. for heifers. The differences for each category are reported in Appendix Table III.

Comparing prices for direct to packer live weight sales with Toronto and country auctions involved a slightly different procedure. Direct sale prices were used for three of the same days as were observed at Toronto (July 15, 18 and 25). Price differences were obtained for each day for each of the 12 categories. Averaging the three days for each category shows that prices for three categories for steers (A1, A2, A3) were higher for Toronto and one was lower (B steers). For heifers, one category (A2) was higher in Toronto and four were lower. The mean average difference of Toronto over direct was $0.96/cwt. for steers and -$1.04/cwt. for heifers.

The only purchase day for comparing auctions with live direct sales was July 24, the sale day for the Hensall auction. In all categories, live direct prices were higher than those at Hensall. The mean average price difference for steers (Hensall less live direct) was -$2.01/cwt. for steers and -$1.14/cwt. for heifers. These differences for each category are reported in Appendix Table III.

In summary, live prices were higher at Toronto than at any of the country auctions on comparable days. Prices at Toronto were higher for steers but lower for heifers than live direct sales on comparable days. Prices for live direct were higher than those observed at Hensall auction for the same day.

It should be noted also that prices at country auctions can be expected to be lower than Toronto, since transportation costs, shrink and marketing charges would be lower. An estimate of these differences is given in the carcass cost comparisons section.

(ii) Live Price Variability. To measure the variability of prices within each category, standard deviations about the mean of prices were calculated. Small standard deviations indicate that the price variability within the categories is relatively small. Conversely, large standard deviations indicate a great dispersion of prices. Table 4 shows the standard deviations for each of the price categories. Approximately one half of the categories had a standard

Table 4: Standard Deviations of Live Prices for Steers and Heifers, by Grade, by Market

	Toronto June 13	Toronto July 4	Toronto July 15	Toronto July 18	Toronto July 25	Stratford July 4	Kitchener July 10	Hensall July 24	Direct Live
A1									
Steers	1.46	1.15	1.47	1.86	1.22	1.31	1.60[a]	1.51	2.12
Heifers	2.48	1.64	2.15	3.31	2.32	0.64		1.58	2.17
A2									
Steers	1.28	1.22	1.17	1.24	1.63	0.91	2.03[a]	1.08	1.29
Heifers	2.12	2.38	2.48	2.83	1.40	0.64		1.11	2.94
A3									
Steers	1.36	1.18	1.14	0.88	0.81	0.65	3.09	0.88	1.06
Heifers	1.66	0	2.37	0	0	0.52	-	0.70	2.56
A4									
Steers	1.69	1.11	1.08	0.50	0.97	4.95	3.11	-	1.60
Heifers	0	-	2.06	-	-	-	-	0	-
B									
Steers	3.13	1.97	2.63	1.81	2.34	2.60	2.32[a]	0	2.40
Heifers	2.93	1.00	1.80	2.18	2.51	0.75		0.73	3.14
C									
Steers	3.22	1.17	1.66	2.23	1.47	2.54	3.38[a]	3.46	1.78
Heifers	1.12	0	2.08	0.71	2.96	1.28		5.34	4.29

[a] Sample too small to supply reliable estimates.

Source: Commission Survey.

deviation less than \$1.50/cwt.[4] In Toronto, most of the A grade steer categories had a standard deviation of less than \$1.50/cwt. while for most of the heifer categories it was larger. Most of the B and C grade categories in Toronto had a standard deviation above this level. For country auctions,[5] the reverse was seen with most heifer but a minority of steer categories below a \$1.50/cwt. standard deviation. Also, in direct to packer live sales, most categories exceeded the \$1.50/cwt. level.

The variation within the A grades was less than the B and C grades. There seemed to be little difference for steers between Toronto and the country auctions while price variability for heifers appeared lower for country auctions. Direct to packer sales appeared to be more variable than the other two types of markets.

Carcass Cost Comparisons

(i) Carcass Cost Levels. Carcass costs are prices paid by packers on a live basis translated into an equivalent carcass cost.

Carcass cost comparisons are more accurate than live price comparisons since variability resulting from dressing percentages is taken into account. Carcass costs were computed using discounts for off-grades shown in Appendix Table I and described in Appendix I. The average carcass costs by category are shown in Table 5.

If there was no difference in dressing percentages between lots, the price ranges (or differences between the high and low daily average price) observed at the live level should be 1.7 to 1.8 times as large for carcasses. In general, carcass cost ranges were larger, but not by a large percentage indicating that dressing percentages did account for some of the daily price fluctuations observed at the live level. For Toronto, the high and the low daily average cost for A1 steers differed by \$4.03/cwt., \$0.90/cwt. more than the live price range. For B grade steers, the cost range was \$2.33/cwt. or \$0.43/cwt. more than the live price range. For C grade steers, the cost range was \$4.49/cwt. or \$1.37/cwt. less than the live price range. The range in carcass costs for heifers was \$4.04/cwt. for A1, \$2.00/cwt. greater than the live price range. For B grade heifers, the cost range was \$4.67/cwt., \$0.35/cwt. more than for the live price range and for C grades, the cost range was \$12.21/cwt., \$4.66/cwt. more than the live price range.

---

4 A standard deviation of \$1.50/cwt. would imply a price range of \$6.00/cwt. for a category with a large number of lots.

5 Not including Kitchener heifer categories.

Table 5: Average Carcass Costs for Steers and Heifers, by Grade, by Market

	Toronto June 13	Toronto July 4	Toronto July 15	Toronto July 18	Toronto July 25	Stratford July 4	Kitchener July 10	Hensall July 24	Direct Live	Rail Grade
A1										
Steers	84.99	88.74	85.24	83.72	83.95	86.59	84.00	82.20	83.69	83.26
Heifers	83.02	81.19	79.60	77.98	80.23	83.37	a	77.67	78.35	78.18
A2										
Steers	85.48	89.15	86.03	84.74	84.38	87.16	84.62	82.20	84.52	83.41
Heifers	84.28	80.90	78.65	79.16	79.22	82.88	a	78.15	77.57	77.97
A3										
Steers	82.10	86.10	83.11	80.86	80.42	83.24	80.34	78.32	80.98	79.40
Heifers	84.31	82.05	75.26	74.24	72.87	79.55	-	73.75	72.26	74.09
A4										
Steers	76.20	80.47	77.93	75.62	74.71	75.34	74.20	-	74.57	74.06
Heifers	79.17	-	72.68	-	-	-	-	69.79	-	67.50
B										
Steers	72.90	74.59	73.02	72.26	72.47	75.35	74.21	71.03	72.54	72.89
Heifers	74.04	71.69	70.33	69.67	69.43	73.89	a	68.91	68.42	68.07
C										
Steers	61.29	65.78	65.33	65.69	62.13	66.23	62.38	59.77	63.19	60.93
Heifers	61.27	60.24	58.85	49.06	54.79	61.81	a	44.45	47.32	46.77

[a] Sample too small to provide reliable estimates.

Source: Commission survey.

Comparing carcass costs between Toronto (July 4) and Stratford, all A grade steer costs were higher, but most A grade heifer costs were lower. All B and C grade costs were lower in Toronto. Steer costs, on average, were $1.82/cwt. higher in Toronto but heifer costs were $1.08/cwt. lower in Toronto than Stratford. Differences by category are shown in Appendix Table IV. Some of these differences were less than those observed at the live level, indicating a lower dressing percentage for cattle at Stratford. Thus, while live prices may have been lower at Stratford, the carcass costs in some cases were higher because of lower yields.

Comparing carcass costs between Toronto and Kitchener, all costs were higher in Toronto, except B steers and C heifers. The average difference was similar to the live price differences. Costs for steers averaged $1.81/cwt. and for heifers averaged $2.25/cwt. higher in Toronto than Kitchener. Individual category price differences are shown in Appendix Table IV.

Comparing carcass costs between Toronto and Hensall, all costs were higher in Toronto except A3 heifers. Average differences were $1.96/cwt. for steers and $2.73/cwt. for heifers.

Comparing carcass costs for Toronto and live weight direct to packer sales on comparable days indicates that average steer costs were lower in Toronto by $0.12/cwt. but heifer costs were higher by $1.58/cwt. This is a reversal of the differences observed at the live level, indicating a higher dressing percentage for steers but lower for heifers at Toronto.

Comparing carcass costs between Hensall and direct live weight purchases, for the same day, costs for steers were $3.93/cwt. and heifers were $0.09/cwt. lower at Hensall. Steer carcass cost differences were substantially less than on a live basis, indicating a higher dressing percentage at Hensall than live direct sales.

Rail grade costs were higher for both steers and heifers than at Hensall. The difference being $1.27/cwt. for steers and $0.30/cwt. for heifers.

In summary, costs at Toronto were higher than at country auctions for steers, consistent with the live differences. Costs for heifers were higher for Stratford, but not for Kitchener and Hensall. Costs for heifers were higher in Toronto than all direct to packers sales but steers were slightly lower for live weight sales and slightly higher for dressed weight sales. Hensall costs were lower than direct to packers sales.

Carcass costs at Toronto must be at least $1.10 to $1.70/cwt. higher than at the country auctions to provide producers with the same net returns on account of higher transport, shrink and marketing charges. The transportation charges from Kitchener, Stratford and Hensall were estimated to be $0.50, $0.60 and $0.70/cwt., live weight. A one percent higher shrink before animals are sold was estimated for Toronto, above that for the auctions. Marketing charges are up to $1.00 per head higher at Toronto.

Taking these differences into account, nearly one half of the categories show higher net returns to producers at the country auctions, most frequently for heifers and lower grades. If shrink differences are even greater than one percent higher in Toronto, then net returns at country auctions would be even better.

Direct shipments costs can be approximately $0.75 to $1.00/cwt. below Toronto costs and still return producers an equal amount as marketing charges, plus a one percent shrink, will give a difference of this level. Again, approximately one half of the categories showed lower net returns in Toronto, than direct to packer sales, mainly steer categories and lower grades. A lower cost of approximately $0.50/cwt. for direct sales below that for auctions can still provide equal returns to producers. Since most costs were lower at the Hensall auction than were direct to packer sales, this simply indicates that direct costs were even higher than at auctions.

(ii) Carcass Price Variability. The standard deviations of prices for the carcass categories are shown in Table 6. While larger in absolute terms than the live price standard deviations, they are generally considerably smaller in relation to their means. This implies that when variability, due to yields, is taken into account, beef prices are less variable. The relative extent of the variability among categories remains the same as for the live basis.

The additional categories for rail grade have a cost variability which, on average, is less than for other markets. In comparison with Toronto on July 25, five of the 10 categories are significantly higher in Toronto. In comparison with Hensall, three categories are significantly lower for rail grade, while two are significantly higher.

Heifer costs are frequently more variable than steer costs. Tests of statistical significance indicate that in 26 out of 49 comparisons, heifer costs were more variable within categories. Seven cases were found where heifer costs were significantly lower, five of these were at Stratford and Hensall auctions. The complete results of these comparisons are shown in Appendix Table V.

Comparing the variability of A1 steers and heifers in Toronto on June 13 with other markets, it was found that cost variability for steers was significantly lower for Stratford and for rail grade sales, but higher for direct live to packer sales than in Toronto. For A1 heifers, Stratford, Hensall and all direct to packer sales were significantly less variable than cost in Toronto for June 13.

Comparing each category between Toronto and Stratford on July 4, it was found that Stratford had significantly lower variability in five out of nine categories. Comparing Toronto and Kitchener, the latter had significantly higher variation for seven out of 10 categories. Comparing Toronto and Hensall, two out of four steer categories were significantly higher for Hensall, while three out of four heifer categories were significantly lower in Hensall.

Table 6: Standard Deviations of Carcass Costs for Steers and Heifers, by Grade, by Market

	Toronto June 13	July 4	July 15	July 18	Toronto July 25	Stratford July 4	Kitchener July 10	Hensall July 24	Direct Live	Rail Grade
A1										
Steers	2.20	1.95	2.21	2.06	1.54	1.71	2.15[a]	2.19	2.84	1.22
Heifers	3.30	2.12	3.03	4.70	2.85	1.31		2.28	2.35	1.77
A2										
Steers	1.83	2.11	2.04	1.80	1.56	1.56	2.39[a]	1.62	1.62	1.19
Heifers	3.08	2.95	3.38	4.02	2.41	1.31		0.94	3.71	1.78
A3										
Steers	1.56	1.61	1.75	2.48	1.54	1.25	3.12	1.26	1.25	1.39
Heifers	1.49	0	3.13	0	0	0.27	-	0.11	2.73	1.11
A4										
Steers	1.44	1.47	1.44	1.36	1.64	2.91	3.22	-	1.94	0.77
Heifers	0	-	3.07	-	-	-	-	0	-	0.71
B										
Steers	3.66	3.11	3.51	1.56	2.06	1.98	2.95[a]	0	3.28	2.56
Heifers	3.65	1.93	3.07	3.24	3.38	1.13		0.42	4.14	2.74
C										
Steers	3.30	3.41	2.61	2.17	1.28	3.33	4.11[a]	7.08	2.65	5.13
Heifers	2.46	0	3.63	2.71	5.19	2.86		9.77	6.56	12.44

[a] Sample too small to provide estimates

Source: Commission survey.

Comparing all direct live sales with Toronto on July 25, four categories were significantly lower in Toronto while two were significantly higher and four were not significantly different.

Price variability was significantly smaller in Hensall than for direct live weight sales to packers for three categories and higher for one.

Cost variability for B and C grade carcasses was found to be significantly higher. This is accounted for, in part, by the grouping together of all B and C grades into one category which naturally would be less homogenous than one of the A categories.

Additional Aspects of Data

The extent of competition appears satisfactory in all markets observed. This is based on the number of firms purchasing lots of different grades. These data are shown in Table 7. Toronto had more buyers purchasing lots of cattle than country auctions, particularly for steers. The largest number of buyers, however, are for rail grade purchases.

Table 7: Number of Buyers Purchasing Lots of Cattle

	Toronto	Country Auctions	Direct Live	Direct Rail
Steers				
A1	8-13	5-11	5	14
B	6-11	1-6	4	9
C	2-6	2-3	1	8
Heifers				
A1	5-9	5-9	5	11
B	3-6	3-4	4	6
C	1-4	2-5	4	9

Source: Commission Survey

There did not appear to be any one firm dominating any market. In nearly one half of the categories, at the terminal and auctions, one firm did not purchase even one third of the lots sold. In one third of the categories, there was one firm purchasing one third to one half of the lots. In the remaining categories, one firm did purchase more than one half of the lots, but these were categories with only one to three lots.

A check was made on the number of days from purchase to slaughter. Since most of the sale days, particularly in Toronto, were on Friday, most lots of cattle were not slaughtered until the Monday or Tuesday of the following week. There were some lots, however, that were not killed until six days after purchase. The number of days before killing and the cumulative percentage killed each day are shown in Appendix Table VI.

A major limitation of the study was the inability to follow sale lots of cattle through to the carcass level. Sublots were aggregated into packer kill lots. This created an additional source of within-lot variability. A test was made of the standard deviations of sublots within the packer kill lots. More than 50 percent of the steers and heifers sublots had a standard deviation less than 1.0, indicating a rather homogenous aggregation. However, there was 6.5 percent of the steer lots and 15.8 percent of the heifer lots which had standard deviations exceeding 4.0 indicating there was a small percentage of the packer kill lots which was the result of lumping together cattle whose purchase price was quite different.

4. SUMMARY AND CONCLUSIONS

Price Levels

(i) No single marketing channel demonstrated a clear advantage in providing a higher net return to producers, although for some grades and sexes, there were important differences.

(ii) For heifers, carcass costs and producer returns were generally highest at the Toronto terminal market.

(iii) For steers, producer net returns were found to be highest for direct to packer sales.

(iv) Country auctions provided comparable net returns to producers for steers as in Toronto but lower for heifers. They also provided comparable net returns for heifers as direct to packer sales, but lower for steers.

(v) Live price comparisons between markets can be misleading as direct and indirect marketing costs differ substantially. Also, because of yield differences, live prices in certain markets may be lower than other markets, but on a carcass cost basis, the converse situation exists.

Carcass Cost Variability

(i) Variability in carcass costs is substantially greater for heifers than for steers. This indicates a greater degree of difficulty in estimating the value of heifers and/or a smaller market for heifers.

(ii) Variability in carcass costs for A grade cattle is substantially less than that for B and C grade cattle. This is probably due to the same reasons as cited above for heifers.

(iii) For A grade cattle, variability in carcass costs is lowest for rail grade and highest for live weight sales direct to packers.

(iv) For Hensall and Stratford, carcass cost variability is less than Toronto, particularly for heifers. For Kitchener, the converse relationship exists in comparison with Toronto.

(v) For all grades and sexes, variability in carcass costs are large in absolute terms. More than one half of the categories had a standard deviation in carcass cost greater than $1.50/cwt. which

for categories with a large number of lots would imply a price range of \$6./cwt. Therefore, producers of similar grade cattle may receive widely differing prices and thus higher quality lots of cattle may not receive the higher prices.

Other Conclusions

(i) Competition at most markets appeared adequate with a large number of buyers, and no single firm dominating purchases for any particular grade or sex.

APPENDIX I

PROCEDURE FOR CALCULATING GRADE EQUIVALENT PRICE

The procedure for calculating a Grade equivalent price was as follows:

1. The average live price for the lot of cattle was obtained.

2. The Official grades for each lot were listed.

3. The dressing percentage was calculated from the ratio of dressed to live weights.

4. The average dressed weight price (flat cost) for each lot was obtained by dividing the live price by the dressing percentage.

5. The A1 equivalent price was calculated by increasing the average (or flat) costs by the discounts for each grade other than A1, times the number of head of each grade.

The following numerical example illustrates the above:

1. A lot of cattle was purchased for $50/cwt. live weight.

2. The lot contained nine steers which graded 3A1, 2A2, 2A3, 1A4 and 1B1.

3. The live weight was 9,000 lb. and the hot dressed weight was 5,220 lb. giving a dressing percentage of 0.57.

4. The average flat cost or average price of the lot on a dressed basis was $50/cwt./0.57 $87.72/cwt.

5. The discounts from the A1 price were:

(i)	A2	2 head X $0/cwt.	0
(ii)	A3	2 head X $4/cwt.	8
(iii)	A4	1 head X $10/cwt.	10
(iv)	B1	1 head X $10/cwt.	10
	Total discounts		$28.00

Average discount is $28/9 $3.11

Therefore, A1 equivalent price is average flat cost ($87.74/cwt.) plus average discount per head ($3.11/cwt.) or <u>$90.83/cwt.</u>

A2 equivalent price is A1 less A2 discount or <u>$90.83/cwt</u>.

A3 equivalent price is A1 less A3 discount or <u>$86.83/cwt</u>.

A4 equivalent price is A1 less A4 discount or <u>$80.83/cwt</u>.

B equivalent price is A1 less B discount or <u>$80.83/cwt</u>.

C equivalent price is A1 less C discount or <u>$72.83/cwt</u>.

APPENDIX II

CO-OPERATING MEAT PACKERS

1. J.M. Schneider Ltd.,
   Kitchener
2. Burns Foods Ltd.,
   Kitchener
3. Norstern Packers Ltd.,
   Kitchener
4. Essex Packers Ltd.,
   Kitchener
5. Dee's Beef Co.,
   Guelph
6. Canadian Abattoir,
   Toronto
7. Prime Packers Ltd.,
   Toronto
8. Town Packers Ltd.,
   Toronto
9. Wm. Puddy Beef Ltd.,
   Toronto
10. Sterling Packers Ltd.,
    Toronto
11. Grace Meat Packers (York) Ltd.,
    Toronto
12. Fearman's Ltd.,
    Burlington
13. Paletta Bros. Meat Products Ltd.,
    Burlington
14. Canada Packers Ltd.,
    Toronto

15. Comfort & Tylee Ltd.,
St. Ann's (Ont.)

16. Crabtree Meat Packers Co., Ltd.,
Ottawa

17. Capital Meat Co., Ltd.,
Vanier

18. Ottawa Beef Co., Ltd.,
Ottawa

19. Canadian Dressed Meats Ltd.,
Toronto

20. Quality Meats,
Toronto

21. Hyland Meat Packers
Toronto

22. Monarch Meat Packers Ltd.,
Toronto

23. Palmont Packers Ltd.,
Montreal

24. Interstate Meat Packers
Montreal

25. Dorr Bros.,
Stoney Creek

26. Piave Meat Packers
Toronto

27. Sunnybrook Meat Packers
Toronto

APPENDIX TABLES

Table I: Discounts Used in Calculating A1 Equivalents Carcass Costs

Grade	Steers	Heifers
	($/cwt.)	
A1	0	0
A2	0	0
A3	4	4
A4	10	9
B1-4	10	9
C1	18	22
C2	20	22
A1X	4	0

Table II: Number of Head in Sample, by Grade

Grade	Steers	Heifers	Light Heifers	Cows	Total
A1	4,507	1,249	17	-	5,773
A2	3,522	739	15	-	4,276
A3	639	83	-	-	722
A4	136	9	-	-	145
A1X	32	-	-	-	32
B	428	124	10	1	563
C	270	116	2	16	304
D1,2	-	7	-	150	157
D3,4	1	-	-	188	189
E	7	-	-	-	7
Total	12,013	3,269	44	355	15,681

Source: Commission survey

Table III: A Comparison of Average Live Price Differences Between Markets, by Grade and Sex.

	Toronto less Stratford	Toronto less Kitchener	Toronto less Hensall	Toronto less Live Direct	Hensall less Live Direct
			($/cwt.)		
A1					
Steers	1.51	1.32	1.65	1.14	-1.19
Heifers	1.19	2.67	1.64	0.54	-2.65
A2					
Steers	1.37	1.21	1.22	1.63	-0.78
Heifers	1.80	2.02	0.47	1.59	-1.86
A3					
Steers	1.92	2.10	1.64	2.41	-0.22
Heifers	6.25	-	0.96	-1.55	-
A4					
Steers	4.32	2.93	-	-	-
Heifers	-	-	-	-	-
B					
Steers	0.44	-0.78	-0.39	-1.32	-0.78
Heifers	0.44	6.36	1.88	-2.15	-0.08
C					
Steers	3.48	2.01	2.89	-	-7.08
Heifers	1.73	0.93	5.13	-2.59	-1.86
Mean difference					
Steers	2.17	1.47	1.40	0.96	-2.01
Heifers	2.28	3.00	2.02	-1.04	-1.14
Median of differences					
Steers	1.71	1.67	1.64	1.39	-0.78
Heifers	1.73	2.35	1.64	-1.55	-1.86

Source: Calculated from Table 3

Table IV: A Comparison of Average Carcass Cost Differences between Markets by Grade and Sex

	Toronto less Stratford	Toronto less Kitchener	Toronto less Hensall	Toronto less Live Direct	Toronto less Rail Grade	Hensall less Live Direct	Hensall less Rail Grade
				($/cwt.)			
A1							
Steers	2.15[a]	1.24[a]	1.75[a]	-1.29	0.69[a]	-3.18	-1.06[a]
Heifers	-2.18[a]	2.54[a]	2.56[a]	2.56	2.05	-1.47	-0.51[a]
A2							
Steers	1.99[a]	1.41[a]	2.18[a]	2.91	0.97[a]	-3.29	-1.21
Heifers	-1.98[a]	0.74	1.07[a]	4.08	1.25	-0.41	0.18
A3							
Steers	2.86[a]	2.77[a]	2.10[a]	0.21	1.02	-2.82	-1.08
Heifers	2.50	-	-0.88	-1.60	-1.22	-	-0.33
A4							
Steers	5.13	3.73[a]	-	-	-	-	-
Heifers	-	-	-	-	-	-	1.29
B							
Steers	-0.76	-1.19	1.44	-2.31	-0.42	-3.53	-1.86
Heifers	-2.20[a]	8.89[a]	0.52	1.89	0.36	1.61	-0.16
C							
Steers	-0.45	2.95	2.36	-	1.20	-6.79	-1.16
Heifers	-1.57	-3.17[a]	10.39	0.97	8.02	-	-2.32
Mean difference							
Steers	1.82	1.81	1.96	-0.12	0.69	-3.92	-1.27
Heifers	-1.08	2.25	2.73	1.58	2.09	-0.09	-0.30

[a] Significant differences at .05 level

NOTE: Direct to packers live weight differences were not tested.

Source: Calculated from Table V.

Table V: F-tests Results for Comparison of Variability in Prices for Steers and Heifers

	Toronto					Auctions			Direct Purchases	
Grade	June 13	July 4	July 15	July 18	July 25	Strat-ford	Kitch-ener	Hensall	Live	Rail
A1	*		*	*	*	R	*		*	*
A2	*	R	*	*	*	R	*	R	*	*
A3	*	-	*	R	-	R	-	R	*	*
A4		-	*	-	-	-	-	-	-	
B				*	*		*	-		
C		-	*		*				*	*

* Significant at .05 level (variance of heifer prices significantly higher than steer prices)

R variance of heifers less than steers, significant at .05 level

\- no observations

Source: Commission study

Table VI: Number of Days from Purchase to Slaughter

Days to Kill	Toronto					Stratford	Kitchener	Hensall	Live Direct	Rail Grade
	June 13	July 4	July 15	July 10	July 25					
	Number of Lots (cumulative percent)									
0	2(5.3)	3(9.7)	2(2.7)	-	3(7.5)	-	-	-	5(12.2)	46(25.1)
1	-	-	27(39.2)	-	-	-	4(28.6)	2(10.0)	10(36.6)	75(66.1)
2	-	-	18(63.5)	-	-	-	-	-	16(75.6)	53(95.1)
3	21(60.5)	22(80.6)	21(91.9)	16(72.7)	23(65.0)	5(55.6)	-	-	10(100.0)	9(100.0)
4	13(94.7)	5(96.8)	1(93.2)	6(100.0)	5(77.5)	4(100.0)	10(100.0)	15(85.0)	-	-
5	2(100.0)	1(100.0)	-		8(97.5)			3(100.0)		
6			5(100.0)		1(100.0)					
NA	11	6	12	10	13	19	10	6		
	49	37	86	32	53	28	24	26	41	183

Source: Commission survey